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THE RADIO AMATEUR

When the art of Radio was in its infancy, most of the experimental work was carried out by those who were interested from the purely technical and scientific viewpoint without thought of pecuniary reward. In other words, they had the essential Amateur qualifications. As the art became developed for commercial use, regulations became necessary but, except in times of extreme national emergency, there was always a place for the Radio Amateur as we know him.

The Amateur station licences that we hold today have their justifications in our attempts to improve communication and in the facilities that they offer to us in the field of research. To regard an Amateur station as the equivalent of a telephone without wires would be to deny the Amateur Radio tradition and to remove the reasons for the existence of our sometimes hard-won facilities. It should be our constant endeavour to use our licences for the true purposes for which they are issued.

In the use of our Amateur stations for communication purposes, particularly in DX work, we have at hand facilities that are not always available to commercial research workers. Amateur Radio is an international movement in which we can find fellow-workers in many overseas countries and can conduct experiments in communication on a global scale. Bearing in mind also that Amateur Radio is a hobby, we are forced to consider seriously the cost of our equipment. The result of this is that we have to seek efficiency with economy and achieve our results from low-powered equipment of a type that lends itself readily to emergency use. The value of this form of research and training has been demonstrated clearly in our own country in recent years. The growing number of operators in our communication bands has also encouraged research into the more effective use of our Radio spectrum by such means as s.s.b. and highly selective receivers.

Although purely technical research is not confined to the v.h.f. bands, much of it takes place there. The impetus given to work in these bands by Radar and Television and the relative freedom from interference of various kinds provide conditions in which work of a standard approaching more nearly that of the laboratory may be carried out. The short wavelengths encourage antenna experiments that would be impracticable in the medium-frequency bands and enable the construction of working models for subsequent application to lower frequencies. The granting of the Limited Licence by the Authorities is evidence of official recognition of the possibilities of the v.h.f. bands as a research medium.

Communication in the v.h.f. bands, apart from pure research, presents many problems and opportunities. The equipment used may be built in such compact form that it is particularly adaptable to portable and mobile operation. Encouragement for this type of operation is apparent in the activities of the various groups of enthusiasts within the ranks of the Institute. The recent approval for the issue of Television permits will also enable research in Television by propagation instead of by the closed circuit methods previously required.

It is hardly to be expected that every Radio Amateur would engage in all of the activities we have mentioned. A more reasonable expectation is that we, as Radio Amateurs, should be conscious of our tradition and should strive to expand our knowledge. By our deeds and by our words, we must show that we are engaged in a scientific recreation that has a bearing on the welfare of the community. In communication, particularly, we have to remember that we can be heard by listeners on the bands—official or otherwise. Amateur Radio is in our hands and it is up to us to see that it holds its rightful place.

FEDERAL EXECUTIVE.

A Rotary Beam for 20-15-10-5-2 Metres

BY D. C. HABERRECHT,* VK2RS

THERE is no doubt that many of us have from time to time surveyed those multi-band rotary beams one sees from place to place, wondering just what could be done in our own particular conditional circumstances, without perhaps digging too deeply into the family budget. Here is a suggestion which you may find well worthy of consideration.

The writer has for some time been faced with the problem of constructing a rotary system for these bands, namely 20, 15, 10, 5 and 2 metres. Having a 35 foot Oregon tower graced only with a 16 element 2 metre beam, it was decided during the lull in v.h.f. over the winter months to see what could be done. It was considered that separate beams for each band would be somewhat formidable particularly as a 24 element 2 metre beam was considered a near minimum requirement in our particular QTH, to erect this above an already top heavy construction was considered suicide.

Bearing these in mind, it was decided that a rotary single section WBJK type beam was about the best suggestion, however its performance on 15 metres was somewhat in doubt. According to available information its performance on 20 and 10 metres was quite good, being the near equivalent of a good 2 element on 20 and better than a 3 element on 10 metres (since on this band, it becomes virtually a 4 element job).

The question now arose, how would it perform on 15 metres? A chance QSO with a well known VK9 Amateur gave us all the incentive necessary, a short burst from the pages of his log were more than enough to prove in the very least that it possessed both gain and directivity on this band.

And as a well known comedian would say, "Let's give it a go." The results were far greater than our expectations on the three bands. European stations have been worked on all three bands over the past month on phone with reports of S9 and over on 15 metres. However, on 10 metres the reports have not been as good to Europe although we have had many QSOs at R5. No doubt the rather patchy conditions have had quite a lot to do with this, and in view of the repeated comments that "you are the first VK station we have worked since 1947 OM" has given us a great deal of faith in this performance on this band. Many QSOs have been made with Ws with some really excellent reports on all three bands.

CONSTRUCTION REQUIREMENTS

Boom: Kiln dried Oregon, 14 feet long, either 4" by 2" or 4" by 4", depending on whether the 2 metre section is required or not.

Bamboo Supports: Four lengths of selected bamboo rod, obtainable from most sports stores. These are approximately 15 feet in length. Clamp these to the ends of the boom (see diagram).

Vertical Braces: Two lengths of 2" x 1" Oregon 9 feet long, if the two metre

section required, and 4 feet approximately otherwise. Screw these to either ends of the boom in the vertical plane and brace to the boom toward the centre with 2" x 1" timbers; two pieces required for each vertical brace, as per diagram.

Centre Cross-Piece: To the centre of the boom screw two pieces of 2" x 1" timbers 8 feet 10 inches long; space these approximately 1 foot apart, half way along each side, and at each end fit 10" pieces of the same timber to form a ladder construction. This cross-piece apart from supporting the elements, forms the boom of the 5 metre beam.

Spreaders for Bamboo Supports: Construct from 1" x 1" timber two 2 feet 6 inch lengths, from the ends cut a



wedge shape piece to enable a tight fit between the bamboo supports with the wire elements of the beam attached. Before binding these in position, form the beam by attaching the four elements each 16 feet 6 inches long and bend the bamboo until the required spacing of 8 feet 8 inches between elements is reached. You will probably find that there will be an excess length of bamboo. After making sure that the spacing between elements is correct with the spreaders moved firmly in place, remove the excess lengths of bamboo.

Wire Supports: From the ends of the elements to the vertical brace, approximately 3 feet 6 inches up from the boom, attach wire supports just sufficiently tight enough to prevent any sag in the bamboo supports when lifted from the ground. These could be broken with insulators if required.

Cross-Over Section: These are made up of the same materials as the elements and are made each 9 feet long crossing over at the centre of the boom. The feedline is attached approximately 1 inch from the centre. It is best to use an open wire line attached to a parallel tuned aerial coupler if the length of feedline does not exceed 60 feet, however for ease for rotation tuned 300 ohm ribbon can be successfully used

if the length of feed is not too long, however here the velocity factor of ribbon must be considered—approximately 45 feet of ribbon is the equivalent of a 66 foot length of open wire feed and providing the overall length does not exceed the 45 feet mark, the losses encountered will not be serious.

It is essential to use a coupler if multi-band operation is required, a single parallel tuned circuit will suffice, approximately 5 turns of heavy gauge wire 2" in diameter, tuned by a 100 pF. double-spaced condenser.

A word of warning! Use good quality wire throughout, most particularly in the feedline. Single strand plastic insulated wire is not satisfactory, the currents in this type of antennae are very high and unless good materials are used losses due to heating will occur.

An interesting comparison between the two types of feed lines, i.e. open wire and 300 ohm ribbon, was made. It was found that on "receive" the width of the beam appeared to be about 40 degrees before a noticeable drop in signal strength occurred. This, according to available information, was near correct. However, when the ribbon feed was attached, on "transmit" the beam appeared to be quite noticeably sharper, approximately 30 degrees wide, with a drop of from 5 to 7 S points on the ends. A much better drop than with the open wire line. This is probably due to the lower signal pick-up in the lower impedance line, however there appeared to be no noticeable difference between the two types when transmitting.

24 ELEMENT 2 METRE BEAM

This consists of 12 driven elements backed by 12 reflectors, arranged as two separate 12 element beams mounted side by side and fed in phase. This type of beam is known as a phased or co-linear type. The elements themselves are made from expanded copper wire, having at least three strands of 22 gauge wire.

CONSTRUCTION

Element Supports: These are made from 1" x 1" timber 13" long, six being required, at a distance of 5" from the centre and at ends of the supports drill a hole. Screw these supports to the vertical braces, three to each brace at a distance of 39" apart, commencing from the top of the brace. This will now complete the framework on which the beam is mounted.

Insulators: Between each element and at the ends are attached small insulators made from polystyrene rod of approximately 1" diameter. There are 15 lengths 1" long and a similar number 2" long required. At each end, with the aid of the soldering iron, heat into the rod a good quality solder lug so that approximately 1" protrudes. After the 30th insulator you will have become quite professional!

Elements: Cut 12 lengths 38" long for the radiators and attach these to the 2"

* 805 Abercorn Street, South Albany, N.S.W.

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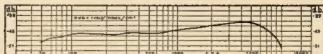
When mounted in a microphone cage, it is recommended that the insert be suspended in rubber, to eliminate shock and vibration.

One of the connecting lugs is directly connected to the case and care should be taken to solder the metal shield of the microphone cable to this solder lug, keeping the unscreened portion of the centre conductor as short as possible to eliminate hum pick-up.

All crystal elements are mounted on high grade suspension pillars, being fixed thereto with a good quality cement, thus ensuring stability and long life.

Case 1 1/2" diameter (rear), 1" thickness, 1-13/16" overall diameter (front) with filter fitted.

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Australia and the International Geophysical Year*

By PROFESSOR H. C. WEBSTER, Convener, Australian National Committee for the I.G.Y.

THE period, July 1957 to December 1958, will have a special significance for physicists, for during this period a concerted effort, spread over a large proportion of the earth, is to be made to understand the various physical phenomena which occur naturally in and on the earth. Among the phenomena, the following have been singled out for special study:

1. The movements of air and water in the atmosphere, especially in the stratosphere and above (say, 30,000 ft. upwards), their part in the general circulation, and broadly the study of what we may call the overall weather. A weather phenomenon of special interest is the thunderstorm, for it has an indirect bearing on other geophysical phenomena; another is the "jet stream" of such importance in high level aviation; a third is the "ozone" layer at about 80,000 ft.

2. The changes in the earth's magnetism which occur, some regularly, some in magnetic storms. Of special importance are the changes near the equator (magnetic) and the regions where aurora are frequently seen overhead (the auroral zones). Here "electrojets" (intense currents) occur in the higher parts of the atmosphere.

3. The brilliant optical phenomena, seen especially in the Arctic and Antarctic, known as "aurora polaris." Apart from observations by eye and by photography these aurora can be observed by radio; we shall return to this aspect later.

4. The various changes which occur in the ionosphere, the strongly-conducting layer extending from about 200,000 ft. upwards. Members of the W.I.A. are familiar with its vital influence on radio communication (except at u.h.f.). The connection between ionospheric changes, magnetic changes, aurora, and phenomena on the sun is perhaps not so well known.

5. The changes in the activity of the sun, solar flares and ejections, sunspots, etc., any, in fact, which influence geophysical phenomena. During the period 1st July, 1957, to 31st December, 1958, the number of sunspots is expected to be very high; the peak of the sunspot cycle is predicted to occur during that period.

6. Cosmic rays: These rays, of so far undetermined origin, enter the earth's atmosphere from outside and produce various secondary phenomena, which extend to sea level and below. They have different properties at different latitudes and show seasonal variations which may throw light on their origin.

7. The behaviour of glaciers, especially those in inaccessible regions such as Antarctica.

8. Ocean currents, ocean wave systems, changes in salinity, etc.

9. Earthquake and the transmission through the earth of earthquake shocks. This throws light on the constitution of the interior of the earth; whether it is solid or liquid, hot or cold.

10. The precise shape of the earth; accurate surveying and accurate gravity measurements. These things do not change (at least not at a measurable rate), but the International Geophysical Year provides a good opportunity for improving our knowledge of them.

Although the promoters of the International Geophysical Year would naturally have wished these phenomena investigated intensively for the whole period and at points closely distributed over the whole earth, it was fully realised that this would be impossible of achievement. A less ambitious programme calling for a limited deployment of stations was therefore formulated and this programme has been accepted by the forty nations which are participating in the International Geophysical Year programme. Although the areas set down for special study vary with the phenomenon to be studied, it is broadly true that special interest attaches to the polar regions, and to strips of the earth's surface 20° wide in longitude straddling certain selected meridians including 0°, 140°E, 75°W. For meteorological purposes, other strips, including 105°E, are included.

Again, although a limited programme of observations should be carried out every day, there are certain selected days, and certain selected periods, when more frequent observations should be made; moreover, there are certain experiments which will be carried out only on these selected days. These days have been termed World-Days. Some have already been selected (Regular World-Days). The rest will be selected only a few hours in advance (Special World Intervals). Such alerts will be given when interesting disturbances appear on the sun.

While most of the observations for the International Geophysical Year will be made on the ground, the programme includes a number of measurements which will require balloons carrying instruments to be sent up to over 30,000 ft. Moreover, it is proposed to send instruments up in rockets to even greater altitudes (perhaps 600,000 ft.). It will probably not be possible to send up many rockets, as they are exceedingly costly; they may be sent up only on "World Days".

Of special interest is the plan to launch "space satellites" which will orbit round the earth some 300 miles up and will carry instruments to permit their being followed (by radio) and send down measurements. The satellite programme is the exclusive prerogative of the United States and is expected to cost \$12,000,000. Indeed the United States programme for the International Geophysical Year is the most ambitious of all and may cost altogether \$28,000,000.

Although it is only major powers like the United States and the U.S.S.R. which can mount programmes of this order of magnitude, nearly forty other nations are taking part in the effort, to the extent permitted by their scientific and financial potential.

Australia is in a position to play a vital role in the International Geophysical Year, for its territories stretch from the Equator to the South Pole and include the 140°E. zone which is singled out for special study, as well as the Antarctic zone which is of special interest in all fields of study and the equatorial zone which is of special interest in ionospheric and Geomagnetic recordings. Fortunately, its existing observations programme of observations in the fields of Meteorology, Geomagnetism, Aurora (at Macquarie Island and Mawson), Ionosphere, Cosmic rays (Hobart and Macquarie Island) and Seismology, but an earnest effort is being made to install additional observatories in all these fields and to increase the frequency of observations. We also hoped to carry out Glaciological, Oceanographical and other observations not previously attempted. It is now certain that some of the new activities planned will be effected but others still remain doubtful. Of particular interest are the extensions in the polar stations of Macquarie Island, Mawson and Vestfold Hills (the latter two on the Antarctic continent).

Members of the Wireless Institute of Australia will no doubt be especially interested in the work on the ionosphere. The existing ionospheric observatories (Townsville, Brisbane, Watheroo, Canberra, Hobart, Macquarie Island and Mawson) will be maintained and a new observatory will, it is hoped, be opened at Moresby. In addition, it is hoped to install a number of observing points for special ionospheric phenomena, such as winds and drifts, absorption and the propagation of whistling atmospherics. The Special World Days referred to earlier will be days on which ionospheric disturbances are expected and more frequent ionospheric observations will therefore be made.

The aspect of the programme upon which the National Committee will seek the co-operation of Wireless Institute members is in connection with the aurora. It has been found in North America that during auroral displays, long distance communication is frequently established at unexpectedly high frequencies—especially in the 50-60 Mc. band. It has been found that in these cases the path between the stations usually passes through or near a region where the aurorae reach the zenith and they are therefore ascribed to reflection from the auroral streams. It is anticipated that during 1957-8 the auroral displays will be particularly good and may reach to comparatively low latitudes. It will therefore be of great interest to the Committee to know of any long distance radio contacts in the 50-70 Mc. band, especially if the path passed south of 60° latitude. Such contacts are perhaps more likely to occur for stations located in the southern States, but any report would be of interest. Nor is the interest confined to

(Continued on Page 6)

* Substance of talk delivered to the Wireless Institute of Australia, Queensland Division.

HINTS AND KINKS

BY C. W. MANN,* VK5DF

WITH the request for articles for our magazine, I will endeavour to illustrate my useful transmitter monitoring instrument. I call it a wave meter, cum phone-cw. monitor, cum overmodulation indication. The bits and pieces are fitted in a box 6" wide by 12" high, by 4½" deep, but with a little more care, guess that a much smaller box would do.

There are two compartments in the box, one holds the tuned circuits, and the other the valves, audio transformer, etc. Power for the valve heaters is obtained from the frequency meter power supply.

Coil "A" is about 45 turns close-wound on a one inch former, and it has a 3-30 pF trimmer across it.

Coil "B" has 14 turns double-spaced wound on a $\frac{1}{2}$ " former, also a small trimmer across it. These trimmers enable the operator to get full band-spread on the tuning condenser.

As can be seen from the drawing, the aerial is switched off for c.w.† as otherwise there is too much power for the audio oscillator, and it will pick up enough signal from the transmitter oscillator on the key-up position to operate the monitor.

The grid leak and condenser of the triode valve may be altered in value to suit the particular tone required.

Briefly, when monitoring c.w. the diode valve rectifies enough r.f. to provide high tension current to drive the audio oscillator and give a very nice tone in the phones on the key-down position. A little "juggling" of the circuit may be necessary to have a sharp make and break of the monitor tone for transmitter key-down and up position. I have found the c.w. monitor a great help in c.w. operating, it helps a lot to keep spacing correct and a steady "hand."

On phone monitoring, overmodulation is indicated by a fluctuation of the milllamp meter, or putting it another way, the meter shows carrier break by swinging a few degrees on modulation; the amount of movement allowable is soon determined by a little experiment.

I trust that the above will be of sufficient information for someone to find the time to build and I am sure when that is done they, like me, will find it ever so useful.

AUSTRALIA AND THE INTERNATIONAL GEOPHYSICAL YEAR

(Continued from Page 5)

the period after July 1957. More details about this plan for radio-location of aurorae will be published later.

Another part of the International Geophysical Year plans which still has to be worked out is the distribution of Alerts, announcing the approach of a Special World Interval. The initial decision will be taken by the United States National Bureau of Standards; the decision will be broadcast by radio; it will then be the responsibility of the National organisation to see that all observers are immediately informed.

The International Geophysical Year provides a great opportunity for Australia to establish its position in the scientific world. Above all, it provides all countries with an opportunity for breaking-down of barriers of jealousy and suspicion and for showing that there is, after all, just one world.

CHANGE OF ADDRESS

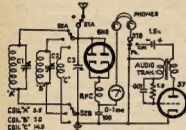
W.L.A. members are requested to promptly notify any change of address to their Divisional Secretary, not direct to "Amateur Radio."

LIGHT WEIGHT FEEDER SPREADERS

Spreaders for open-wire transmission lines should be as light as possible, but sufficiently rigid and with good electrical qualities. Commercially made spreaders of Polystyrene can be bought, but are expensive. A simple and satisfactory substitute can be obtained, however, at no cost at all, from many hospital casualty and orthopaedic departments.

Plaster of Paris bandages of a certain proprietary make are supplied rolled on lengths of X-section plastic extrusion; these are discarded when the bandages are used, and arrangements can usually be made for them to be saved and put aside.

The material is a thermo-plastic and is slightly flexible, but sufficiently rigid for use as spreaders. It appears to have good electrical characteristics. The standard lengths, according to the width of the bandages, are 3, 4, 6 and 8 inches; the 4 and 6 inch lengths are most readily available (Fig. 1).



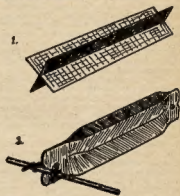
Coil "C" has also 14 turns double-spaced and wound on a $\frac{1}{4}$ " former, but there is no trimmer needed.

All the winding wire is about 22 s.w.g. The aerial is a piece of wire about 3 ft. long, the end of it going to within about 12 inches of the transmitter aerial tuning system.

The phones are high impedance, the audio transformer is of the once used type in "ancient" broadcast receivers and is 4-1 ratio. The 1.5v. dry cell is a miniature torch battery and has already lasted five years. The dry cell is fitted there for what I believe is "contact potential"; briefly it is to neutralise the small voltage generated from cathode to plate of the triode valve when the cathode is hot.

The valves used are shown on the drawing, but I suggest that any valves may be used so long as they are connected as such—the first as a diode and the second as a triode. The switches are a selector for the appropriate coil, and a two-way one to change from phone to c.w. monitoring.

In operating the monitor on phone the meter should read about three-quarters (or a little more) of a milli-amp., and for c.w. monitoring the meter only just shows a reading and that's all.



When collected, the sections are usually covered with a film of dried plaster, but this can be broken away without difficulty owing to the flexibility of the material. If any plaster remains, it can be removed by soaking in water and scrubbing with a stiff brush. If a non-standard length is required, it can be cut with metal shears or stout scissors.

To form the ends, dip the distal half-inch in very hot water to soften the plastic, then squeeze it in a cold pair of pliers or a vice for a few minutes to flatten the end. When the material cools it will retain the shape given it while hot.

To fix the spreader between the conductors of the line, a small hole is drilled within a quarter of an inch of the end, using a hot needle or fine twist-drill; a short length of copper wire is then passed through the hole and twisted round the conductor on either side (Fig. 2).

—S. J. Lloyd, VK3AST.

* Wavell Street, Port Lincoln, S.A.

† Optional—depending on position of instrument and extent of shielding of transmitter.

WHAT ABOUT AN INDEX?

BY J. G. OLIVER,* VK7JO

It would be quite safe to say that practically every Amateur station has an index system of some kind or other, the most elaborate being in the form of a card system in which every station worked has a separate card on which is recorded particulars of each QSO. These cards are kept in boxes in sections, each section representing a country.

While this system is ideal for the ardent DXer, a less elaborate system will fill the bill for the average Amateur, the main consideration being a quick method of telling whether a station calling has been worked before, and if so a record of the name of the operator and possibly the power and any particular tests made.

The newcomer to the ranks of Amateur Radio is faced with the problem of deciding what system he will adopt; the method described here has been in use for a number of years and meets the main requirements of convenience and quick reference.

The only item of expense is a loose-leaf book with pages about 8½" x 5½" and an alphabetical index. Under each letter of the alphabet are three pages, which are ruled as shown in the diagram, the first page headed VK—TWO LETTERS, the second VK—THREE LETTERS, and the third ZL and DX. These headings are self-explanatory, the dividing of the VK calls into two groups gives more space for what will be the greatest number of stations worked.

An important point to watch is the choice of an indicating letter for each call sign, the use of the first letter is not suitable as the majority of calls start with "A", particularly in the three letter group, but by using the last letter, quite an even spreading through the whole of the alphabet will be obtained, and if on each page the VK7s, VK3s, are grouped, any station can be found very quickly.

Of course the column at the right is most important. When a QSL card is sent, an "S" is put in and then an "R" when a card is received. An indication can also be made as to whether the card was posted direct, or via the bureaux,

* Latrobe, Tasmania.

R.D. CONTEST

Readers are reminded that the Remembrance Day Contest commences at 1800 hours E.A.S.T. on 11th August. On pages 10 and 11 of this issue will be found a list of the Canberra (VK1) stations, who are to be regarded as operating in VK2 call area for this Contest. Rules appeared on page 5 of the July 1956 issue.

AWARD FOR TECHNICAL ARTICLES

The Publications Committee of the Victorian Division of the W.I.A. announce that the annual award has been granted to H. F. Ruckert (VK2AOU), 25 Berrille Road, Beverly Hills, N.S.W., for his series of articles dealing with t.v.i.

if these two methods are used, and you will have a quick reply to the question, "Did you receive my card old man?"

VK—TWO LETTERS			
Call		QSL	
○ 5JO	Joe	S R	
5XO	Alex	S R	
5DO	Rex	S R	
7JO	Jim 70w. 21 Mc.	R	
6MO	Allan	S	
6BO	Rolo 21 Mc.	S R	
○			

Example of first page indexed under letter "O"

HINTS AND KINKS

CABLE SOCKETS

When connections are made to an item of radio equipment by flexible cable, it is sometimes convenient to mount the plug on the chassis and the socket on the end of the cable. Octal bases removed from defective valves can be used as multi-way plugs for this purpose, but the corresponding valve sockets require a protective casing or shroud to make them suitable for mounting on the cable. The aluminium cans in which 35 mm. film cassettes are supplied are the right size and suitable material.



1.



2.



3.

A line is drawn round the can about three-quarters of an inch from the bottom, and two fixing lugs are marked out on opposite sides (Fig. 1). The screw thread is cut away from the mouth of the can, and cuts are made down both sides of each lug. The lugs are then bent outwards at a right angle,

and the remainder of the can cut down to the marked line (Fig. 2). A stout pair of scissors can be used if no metal shears are available.

The fixing lugs are drilled and bolted to the fixing holes in the valve-holder, then trimmed to shape. A suitable sized hole is drilled in the bottom, or side, of the can for the cable entry, according to the type required; the hole should be lined with a rubber grommet. A lining of thick paper or thin cardboard is placed round the inside of the can to guard against accidental short circuit to the metal (Fig. 3).

—S. J. Lloyd, VK3AST.

SIMPLE GROUP BOARDS

Small components, such as resistors and condensers, are best mounted on group-boards, if the circuit and layout will allow, and construction is simplified if each board can be made to measure. Cardboard impregnated with shellac is a satisfactory substitute for the laminated phenolic compounds generally used, and is very cheap and easy to work. The sheets of thick cardboard used for packing X-ray films are particularly suitable, and when treated with shellac yield a product similar to Paxolin.



The boards are cut to size and shape before impregnating, soaked in a thin solution of shellac in methylated spirit, and dried thoroughly. Commercial shellac varnish can also be used, after thinning with spirit. The easiest way to mount small components on the board is to push the wire ends through holes in the board, cut off short, and bend over to anchor. Interconnecting leads are then soldered directly to the wire ends on the underside of the board (Fig. 1).

To provide scope for later changes, however, it is better to fix soldering tags to the board with small rivets or screws and nuts (Fig. 2).

A cheaper way is to use brass paper-fasteners as anchoring points. They are pushed through holes in the board, the ends cut short, and opened out; the component is then soldered to one arm of the fastener and the connecting leads to the other (Fig. 3).

If the group-board is to be mounted in contact with a metal chassis, a sheet of thinner cardboard may be similarly treated with shellac and mounted underneath, to insulate the connections from the chassis.

—S. J. Lloyd, VK3AST.

1955 VK-ZL DX CONTEST RESULTS

AUSTRALIA

C.W.—	Total	40	20	15	10
Call					
VK2GW	3326	773	1745	808	—
VK2AHH	1800	156	1289	375	—
VK2QL*	1338	352	730	241	—
VK2XZ	993	993	—	—	—
VK2PX	713	—	713	—	—
VK2HZ	677	647	30	—	—
VK2JW	585	—	498	87	—
VK3PG	2696	30	1767	783	116
VK3IW	1325	73	1172	90	—
VK3XB	1073	743	330	—	—
VK3CX	1072	—	1072	—	—
VK3HL	1005	—	1005	—	—
VK3JA	958	—	727	231	—
VK3VF	951	—	951	—	—
VK3AHM	648	—	648	—	—
VK3ZA	572	572	—	—	—
VK3PL	504	—	504	—	—
VK3AHH†	117	—	—	—	—
VK4SE	1100	—	723	377	—
VK5RX	1198	—	1198	—	—
VK5WO	677	—	633	44	—
VK5JT	500	—	500	—	—
VK6RU	2457	416	1242	784	15
VK7UW	1450	333	1117	—	—
VK7KM	413	413	—	—	—
VK8DB	1769	114	468	1167	—

* Includes 80 mx score.

† 80 mx only.

PHONE—

Call	Total	40	20	15	10
VK2AHH	886	45	709	132	—
VK2GW	479	13	375	89	—
VK2AKV	444	—	349	80	15
VK4SF	1923	60	1215	618	30
VK6MS	1489	—	1489	—	—
VK5WO	314	—	314	—	—
VK6RU	583	—	305	278	—
VK9DB	1398	—	461	922	15

LISTENERS—

VK2—N. L. Daah	1142
VK3—G. R. Morris, WIA-L3017	750
VK2—W. Davey	588
VK3—M. Ide, WIA-L3015	551
VK7—R. de Balfour	158
VK6—F. H. Price, WIA-L4222	110

NEW ZEALAND

C.W.—	Total	40	20	15	10
Call					
ZL1AH	4285	537	2298	1206	244
ZL1MQ	2583	260	1668	404	251
ZL1GX	725	—	621	89	15
ZL1PN	713	713	—	—	—
ZL1MT	423	—	378	30	—
ZL2CS	2635	—	1828	707	—
ZL2AFZ	1890	—	1890	—	—
ZL2ARL	1053	59	633	361	—
ZL3JA	2392	514	1878	—	—
ZL3LL	1187	1187	—	—	—
ZL4CK	1823	289	1509	15	—
ZL4GA	1024	—	1024	—	—

PHONE—

Call	Total	40	20	15	10
ZL1MQ	1084	73	698	169	142
ZL1PA	503	—	503	—	—
ZL2AJB	239	—	—	239	—

LISTENERS—

ZL1—C. N. Arvidson, ZL111	559
ZL2—R. E. Lepper	534

OVERSEAS

C.W.—	Pts.	C.W.—	Pts.
CX2AM	48	PA0ZL	84
DL3DD	198	PA0OI	1
DM2ABK	135	PA0RJG	4
DL7EN	81	PJ2AN	72
DL1QT	63	PY1ADA	570
DL1EJ	9	PY2AFS	270
DL1YA	9	PY1ANR	126
EA3GF	28	PY3QX	12
EI2T	9	PY2BNX	28
FRM	60	SM5LL	400
FSAT	35	SM7AYA	319
F9VZ	1005	SM3AKM	280
F9MS	28	SM5CO	231
FJ3A	1	SM5DW	200
FK8AC	120	SM6VY	25
G6XL	198	SM5BTX	1
G2HPF	40	W1MX†	261
G3GSZ	18	W1RWP	128
G3GXO	12	W1UGH	45
GI4RY	28	W1NLM	15
HB8DB	4	W1HVI	12
HOJ	32	W1MAN	6
JA3BB	883	K2EOL	940
JA1CR	627	W2WZ	680
JA1SR	390	W2EQS	102
JA1ACA	160	W2FBS	166
JA2BL	98	W2CC	15
JA7AD	88	W3VKD	657
JA1NI	6	W3EPR	40
JA8AA	1	W4KVX	558
KG1KK	9	W5VHR	968
KG6AGC	360	W5CAY	138
KJ8FAB	28	W5DKW	198
LA1AD	1	W5OLG	105
LU7JO	30	W6BYB	1221
OE5LK	2	W6LID	1087
OEBL	168	K6DDO	78
OH1PW	176	W7SFA	1231
OH6OB	152	W7PQE	935
OH1TI	112	W8JIN	680
OH6QZ	112	W8UVZ	96
OH2NQ	35	W9ABA	378
OH2VZ	25	W9FKC	72
OH2XX	24	W0BMM	35
OH3SR	24	XE1XB	224
OH2VN	16	YU3BC	462
OK1KI	84	YU2HO	147
ON4FU	77	SS4AX	104
OZ3FL	105		

† Multiple operator.

‡ Check logs.

PHONE—

C.W.—	Pts.	C.W.—	Pts.
CE2DD	198	OH2OV	112
CX2CO	550	OH5QN	4
DL1UX	280	OH3SR	1
DL1DX	60	ON4LJ	4
DL6WM	28	OZ7OP	1
EA3CK	9	PA0NU	340
F9RM	28	PI1J	280
G3FPQ	91	PA0JA	517
G6XL	16	PY2AHS	70
HC1ES	168	PY1NC	117
HK3PC	460	PY4ZS	112
HK4DP	180	PY1ANR	1
I1TDJ	70	SM5DW	4
JA3BB	620	SM3BIZ	4
KA2AK	510	SM5CO	1
JA2BL	78	TG9AD	884
JAGMG	50	W3VKD	2
JA1CO	30	W5JH	264
JA8AA	1	W6BYB	160
LU7AAT	340	W7SFA	333
LU4DMG	220	W8JIN	208
		W0BBS	6

‡ Check log.

Other Check Logs—

C.W.: HB9GY; Phone: KH6BES and ON4ZC.

LISTENERS—

Switzerland—E. Heritier	30
Japan—Mitsuru Sano	341
Bulgaria—Mladen Georgiev	175
England—J. L. Hall, BR519107	390
R. W. Thomas, BR515822	310
Finland—Kal. Lindfors, OH2-413	30
Norway—F. S. Aabech, LA-M-3053	162
A. L. Sangwill, LA-M-3097	—
Netherlands—H. Frieke, NL864	4
U.S.A.—Ben Adams, Jr., W2-SWL	60

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VICTORIA

QQE03/12—DOUBLE TETRODE

The QQE03/12 is an indirectly heated miniature r.f. double tetrode intended primarily for use as a driver, output amplifier or frequency multiplier at frequencies up to 200 Mc. It can also be used as a Class B audio frequency power amplifier and modulator.

The tube is rated to dissipate 5 watts at each anode in continuous service. It is internally neutralized. The heater is designed to withstand the battery voltage fluctuations encountered in mobile service.

GENERAL DATA

Cathode: Indirectly heated, oxide coated.

Heater sections in Parallel Series
Heater voltage, ϕ ... 6.3 12.6 V.
Heater current ... 0.82 0.41 A.
1—Occasional operation at 8.3 or 7.8 volts with parallel connected heaters (11.0 or 15.0 volts with series connection) is permissible.
2—The tube may be used with only half the heater current during the stand-by period of a transmitter in order to reduce heater current consumption during this time.

Direct Interelectrode Capacitances:

	Each unit in p.p.	Both units in p.p.
Output capacitance	2.8	1.4 pF.
Input capacitance	6.2	5.1 pF.
Anode to grid No. 1 (internally neutralized)	0.1 max.	pF.

Amplification Factor (each unit):

Grid No. 2 to grid No. 1, 7.5.

Mutual Conductance (each unit):

At anode current of 30 Ma., 3.3 Ma./V.

Mounting Position: Any. If the tube is mounted in a horizontal position it is essential that pins 2 and 7 are placed in a vertical line.

Cooling: Radiation and convection. The use of a closed screening can is not permissible.

Size:

Overall length 78 mm. max.
Seated length 72 mm. max.
Diameter 22 mm. max.

Base: Novol.

Socket: 5908/36.

Pin 1—control grid g_1 of unit No. 1.
Pin 2—cathode k and beam plates s .
Pin 3—control grid g_1 of unit No. 2.
Pin 4—heater f .
Pin 5—heater f .
Pin 6—anode a of unit No. 1.
Pin 7—screen grid g_2 (both units).
Pin 8—anode a of unit No. 2.
Pin 9—heater mid-tap f .

H.F. CLASS C TELEGRAPHY

(up to 200 Mc)

Operating Conditions (2 units in p.p.)

—I.C.A.S.—

Frequency	200	250	200 Mc.
Anode voltage (= supply voltage)	300	250	200 V.
Screen grid voltage	200		V.
Control grid bias	-45		V.
Screen grid dropping resistor	27	8.2 k.	
Common control grid resistor	18	15 k.	
Peak grid-to-grid driving voltage	130	120	130 V.
Anode current	50*	40*	42*Ma.
Screen grid current	3	2.4	3.1 Ma.

Control grid current	1.5*	2.5	3 Ma.
Driving power	0.1*	0.15	0.18 W.
Anode input power	15*	10*	8.4*W.
Anode dissipation	5.8*	3.5*	3.4*W.
Screen grid dissipation	0.6	0.45	0.55 W.
Output power	18.5	13	10 W.
Useful output power in load	62	85	60 %
Efficiency	16	11.2	9 W.

* Per Section.

H.F. CLASS C ANODE AND SCREEN

GRID MODULATION

(up to 200 Mc.)

Operating Conditions (two units in p.p.)

	I.C.A.S.	200 Mc.
Frequency	200	200 Mc.
Anode voltage (= supply voltage)	200	200 V.
Screen grid voltage	173	V.
Common control grid bias resistor	15 k.	
Peak grid-to-grid driving voltage	130	V.
Anode current	2 X 43	Ma.
Screen grid current	3.1	Ma.
Control grid current	3.3	Ma.
Driving power	0.2	W.
Anode input power	2 X 8.6	W.
Anode dissipation	2 X 3.7	W.
Screen grid dissipation	0.54	W.
Output power	9.8	W.
Efficiency	57	%
Useful output power in load	8.8	W.

Useful output power in load 8.8 W.

For use as h.f. amplifier, oscillator and frequency multiplier. The QQE04/10 is an indirectly heated beam tetrode with aligned grid construction to minimize screen grid current. It is rated to dissipate a maximum of 7.5 watts in the anode, and is particularly suitable for use at frequencies up to 150 Mc. as high frequency amplifier or frequency multiplier.

GENERAL DATA

Flament: Indirectly heated, oxide coated, 8.3V. (d.c. or a.c.) at 0.6 amp.

Capacitances:

C_{g1} = 0.1 pF.
 C_{g1k} = 8.0 pF.
 C_{ak} = 5.4 pF.

Amplification Factor:

Grid No. 1 to grid No. 2, 5.6.

Mutual Conductance:

At anode current of 25 Ma., 1.9 Ma./V.

Mounting Position:

Any.

Cooling:

Natural.

Size:

Overall length 3-1/16 inches max.

Base diameter 1 1/4 inches max.

Envelope diameter 1 1/4 inches max.

Socket: 40212.

CLASS C TELEGRAPHY

Operating Conditions

Frequency	3	3	20	20 Mc.
Anode voltage	300	300	300	300 V.
Screen voltage	150	250	150	250 V.
Cont. grid bias	-35	-50	-30	-60 V.
Anode current	40	43	43.5	43.7 Ma.
Screen current	7.2	6.6	4.7	5.9 Ma.
Cont. grid cur.	2.8	0.4	1.8	0.4 Ma.

A.F. CLASS AB AMPLIFIER OR MODULATOR

Operating Conditions—Class AB1

Anode voltage	300	250	200 V.
Screen grid volt.	200	200	200 V.
Cont. grid volt.	-21.5	-21.5	-21.5 V.
Load resistance between anodes	10	8	6.5 K.
Driving voltage peak to peak	43.5	44.5	43.5 V.
Anode current	38*	34.5*	33*Ma.
Screen grid current	6.3*	5.2*	7*Ma.
Anode input pow.	10.8*	8.65*	6.6*W.
Anode dissipation	4.8*	4*	3.1*W.
Screen dissipation	1.3*	1.3*	1.4*W.
Output power	12	9.3	7 W.
Total distortion	2.5	2.7	3.2 %
Efficiency	58	54	53 %

* Per Section.

Operating Conditions—Class AB2

Anode voltage	300	250	200 V.
Screen grid volt.	200	200	200 V.
Cont. grid volt.	-21.5	-21.5	-21.5 V.
Load resistance between anodes	6.5	5	5 K.
Driving voltage peak to peak	64	67	54 V.
Anode current	50*	50*	41.1*Ma.
Screen grid current	5.7*	6.5*	9.5*Ma.
Control grid current	0.66*	0.62*	0.22*Ma.
Driving power	0.02*	0.02*	0.01*W.
Anode input pow.	18*	12.3*	8.22*W.
Anode dissipation	6.25*	5.5*	3.87*W.
Screen dissipation	1.3*	1.3*	1.9*W.
Output power	17.5	14	8.7 W.
Total distortion	5	5.5	6 %
Efficiency	58	58	53 %

QE04/10—POWER TETRODE

Peak driving voltage	58	80	40	67 V.
Driving power	0.16	0.025	0.09	0.03 W.
Anode input	12	12.9	13.1	13.1 W.
Anode dissipation	4.9	4.8	5.3	5.2 W.
Output power	7.1	8.1	7.3	7.9 W.
Efficiency	59	62	56	60 %

Frequency	60	80	150	150 Mc.
Anode voltage	300	300	300	300 V.
Screen voltage	150	250	150	250 V.
Cont. grid bias	-30	60	-30	-50 V.
Anode current	44	43	44	46 Ma.
Screen current	6.7	6.7	4.5	4 Ma.
Cont. grid cur.	1.9	0.5	1.5	0.4 Ma.
Peak driving voltage	48	68	52	57 V.
Driving power	0.09	0.04	0.08	0.03 W.
Anode input	13.2	12.9	13.2	13.8 W.
Anode dissipation	8.2	5.1	8.9	7.5 W.
Output power	7.0	7.8	6.3	6.3 W.
Efficiency	53	60	47	45 %

CLASS C FREQUENCY MULTIPLIER

Operating Conditions

Frequency	10/	25/	50/	75/
	20	75	100	150 Mc.
Anode voltage	300	300	300	250 V.
Screen voltage	250	250	200	200 V.
Cont. grid bias	-80	-120	-120	-120 V.
Anode current	41.2	43.3	38.4	39.8 Ma.
Screen current	8	5.5	2.6	2.1 Ma.
Cont. grid cur.	0.8	1.2	1.5	1.1 Ma.
Peak driving voltage	81	124	120	144 V.
Driving pow.	0.065	0.13	0.2	0.16 W.
Anode input	12.4	13	11.5	9.2 W.
Anode dissipation	8.8	7.4	7.1	6.9 W.
Output power	5.8	5.6	4.4	2.3 W.
Efficiency	48	44	38	25 %

AMATEUR CALL SIGNS

FOR MONTH OF APRIL, 1956

(Continued from last issue)

CHANGES OF ADDRESS

- VK-- New South Wales**
 81YK—A. K. Kimberley, 3 Deo St., Kinnear.
 2SA—W. E. Skimble, 17 Flora St., Kinnear.
 2WT—W. F. Puttler, 2 Patricia Ave., Chattertown.
 2XN—W. E. Gibbins, 31 Tupper St., Marrickville.
 2ZN—J. Brand, 428 Burkwood Rd., Belmore.
 2ABT—J. A. St. John, 25 Woodland Rd., Cooma-barabara; Postal: P.O. Box 81, Cooma-barabara.
 2ABU—M. M. Dan (Dr.), 10 Kulgoa Rd., Bellevue Hill.
 2ACO—C. H. Orr, 24 Noble St., Hurstville.
 2AFP—R. L. C. Groom, Keats St., Ryman Bay.
 2AKU—J. G. Jones, 25 Woodland Rd., Artarmon.
 2ALT—W. C. Asplet, 23 Abercorn St., Resley.
 2ANR—N. F. Ritchie, 8 Bent St., Turner, Canberra, A.C.T.
 2AGR—R. W. Rose, 17 Brook St., Walkend.
 2ASO—A. R. Simpson, Station: The Carter St., Cammeray; Postal: P.O. Box 5, Cammeray.
 2ATH—T. L. Hooper, "Loango," Arterial Rd., St. Ives.
 2AVT—E. Tierney, 5 Beach Rd., Edgecliff.
 2ZAD—B. Holland, Station: Church Cottage, Cr. Bridge and Epsworth Sts., West Tamworth; Postal: P.O. Box 5, West Tamworth.

Victoria

- 3DW—K. R. Cokerbread, 45 Carrier St., Bonalla.
 3EW—E. C. Wheeler, 31 Coughlan St., Keilor East.
 3NI—N. R. Boase, 1864 Malvern Rd., Darling.
 3TY—W. H. Murden, Station: C/o. 258, Lake Boga Road, Campbell St., Swan Hill.
 3VM—E. R. Marks (Dr.), Heathered Rd., Sassafras.
 3XU—A. C. Weynton, 5 York Street, Bonahatch.
 3ZR—O. C. Moody, 7 Mary St., Spotswood, W.4.
 3ABM—E. Watson, 5.5 "Aftara," C/o. MacDonald Hamilton & Co., G.P.O. Box 395D, Melbourne.
 3AJI—D. J. Ireland, 5 Rollings Rd., Upper Ferntree Gully.
 3AMI—R. E. A. Orison, "Avarast," Hughes St., Upwey.
 3AMS—A. M. R. Smallwood, Foster, South Gippsland.
 3AUC—A. D. Cook, 24 Dandenong Rd., East St. Kilda.
 3AUD—A. V. Dwan, Portable, Blackwood P.O., via Trentham.
 3AZR—D. C. Ryan, 72 O'Hess St., Coburg, N.13.
 3EBJ—O. S. Jennings, 685 South Rd., Moorabbin, S.5.
 3EBZ—A. W. M. Bueset, 5 Torrensdale Rd., Too-rack, S.E.5.
 3EZR—R. C. Owen, 3b Fitzroy St., Sale.

Queensland

- 4PB—W. J. Rafter, 25 Willandra St., Alderley.
 4SR—J. J. Henkel, 113 Preston Rd., Wynnum West.
 4ZAO—J. C. E. D'Alton, M.S. 1632, Redcliffe.
 4ZAR—N. A. Roberts, 21 Wilkinson St., Rockhampton.
South Australia
 5DT—B. Hancock, Station 5AU, Anley St., Port Augusta.
 5EW—E. W. Evans, C/o. U.S.A.F. Team 61, Alice Springs, N.T.
 5FF—R. F. Farmer, Portable, C/o. Mr. C. Farmer, 7 Kirkcaldy Rd., Grange.
 5GW—N. G. Wallace, 23 Laurier Ave., Sefton Park.
 5LH—R. J. Strachan, 31 Spencer Ter., Port Augusta.
 5LH—N. L. Stuber, 18 Rodney St., Woodville.
 5UX—J. W. Wallbridge, Seddledworth.
 5VC—J. G. Mason, 15 Helen St., Pennington.
 5WF—A. H. Wette, 50 College Rd., Somerton.
 5YL—L. Lindley, 72 Kew Rd., Elizabeth Bay.

Western Australia

- 6AT—A. T. G. Hanson, 58 Northampton St., East Victoria Park.
 6BE—J. R. Eves, 29 Central Rd., Kalamunda.
 6BY—B. R. Aubrey, C/o. Weather Office Aerodrome, Forrest.
 6EL—E. Langenschied, 225 Evans St., Geraldton.
 6HC—C. Hithings, 68 Sorrento St., Nth Beach.
 6IO—J. H. Gintley, 11 Morning Rd., Attadale.
 6JN—J. W. G. Nind, Lot 1173, Wellington Rd., Morley Park.
 6JY—B. Bullinger, 97 Grosvenor Rd., Mt Lawley, Perth.
 6LY—L. Morrison, 33 Hudson St., Baywater.
 6MS—J. H. Sander, 1329 Albany Highway, Camington.

- 6MY—F. T. Murre, Jindong via Busselton.
 6OY—T. H. Mitchell, C/o. Radio Station 6NA, Narrogin.
 6SK—A. A. Skinner, 106 Prinsep St., Norseman.

Territories

- 7KD—I. R. Pearson (Dr.), 17 Linton St., Upper Burnie.
 7PM—F. D. Mulligan, C/o. TNT Private Bag, Kato.
Territories
 8WK—W. K. Webster, D.C.A., Port Moresby, Papua.
 8ZAL—R. P. Lloyd Dpt. of Works Plats. Badliu, Port Moresby.

CANCELED CALL SIGNS

- VK-- New South Wales**
 2AG—A. G. Bradley.
 2BE—W. A. Easterling, Now VK3ABE.
 2DE—D. E. Lalng.
 2H—M. J. Moore.
 2JM—G. E. Meaton.
 2LY—S. L. Skinner, Now VK3AFI.
 2MX—M. R. Cran.
 2OU—M. N. Russell-Clarke, Now VK3AGA.
 2SU—C. B. Jones.
 2AAE—N. K. J. Felstead, Now VK3AAL.
 2ADY—Clarendon District Experimental Radio Club.
 2ALW—B. E. Matheson.
 2AGG—R. E. Gummourie.
 2ATV—K. A. Green, Now VK3KG.
 2AUD—K. E. McDonald.
 2ZBY—J. T. Jarroll, Now VK3ZBC.
 2ZCL—L. T. McLoughlin, Now VK3GV.
 2ZCT—K. A. Thompson, Now VK3ZBT.

Victoria

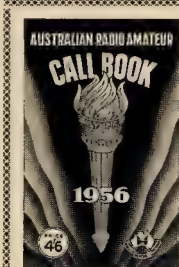
- 3DF—G. F. D. Clarke, Now VK3GF.
 3IJ—D. R. Twigg, Now VK3IJ.
 3QY—C. W. Richardson, Now VK4QZ.
 3TL—R. E. Trebilcock.
 3VC—R. K. Wicks.
 3AIR—M. Irenon.
 3AJD—A. J. Egan.
 3ANY—J. N. Blake.
 3AOF—P. P. O'Dwyer.
 3APL—J. W. London.
 3AQR—J. M. Ray.
 3ARL—A. A. Hallamore, Now VK3RH.
 3ATG—E. Marks (Dr.).
 3ZAP—K. J. Love, Now VK3AWU.

- Queensland**
 4DB—D. S. Brown, Now VK3SB.
 4EN—E. D. Noole.
South Australia
 5AH—F. L. Williamson.
 5AG—J. Cookley.
 5DV—D. B. Vaughan.
 5GY—C. W. Noble.
 5TH—M. G. White.
 5VC—R. F. Deane.
 5TF—H. P. Fuller.
Western Australia
 6ZAH—T. H. Talbot, Now VK3TH.
Tasmania
 7LJ—D. R. Twigg, Transferred to VK3LJ, the 1956.
 7YS—L. I. Griffin (Rev.), Now VK3VS.
Territories
 1RA—R. W. Allison (Dr.), Now VK3AEA.

FOR MONTH OF MAY, 1956

NEW CALL SIGNS

- Australian Capital Territory**
 1ET—E. A. Torrey, 10 Stephen St., Atterley.
 1EY—J. P. Meahan, C/o. Sgt's Mess, R.A.A.F. Station, Canberra.
 1GU—E. H. Cox, 8 Wickham Crescent, Red Hill.
 1HV—H. V. J. Huston, Royal Military College, Duntroon.
 1JG—N. S. Hill, 9 Arunja Street, Narrabundah.
 1JW—W. L. Pitts, 31 Hackett Gardens, Turner.
 1PM—R. E. W. Gray, 30 Meahan Gardens, Narrabundah.
 1RM—Royal Military College Radio Club, Duntroon.
 1TV—R. F. J. Lemon, 13 Hackett Gardens, Turner.
Uth--N. O. Hansen, 5 Towns Cres., Turner.
 1UJ—B. B. Brown, 11 Eden St., Alaisie.
 1ACA—Canberra Radio Club, Station: Hut No. 3, Riverside, Barton, Postal: P.O. Box 88, Kingston.
 1ACD—A. Morris-Rees, Kingston Guest House, Kingston.
 1ADG—J. A. Vent, 11 Campbell St., Ainslie.
 1AIL—K. L. Finney, 11 Westgarth St., O'Connor.
 1ALR—L. R. Burston, Officers' Mess, R.A.A.F. Station, Canberra.
 1ANR—N. F. Ritchie, 8 Bent St., Turner.
 1AOP—E. Pearce, 18 Meahan Gardens, Narrabundah.



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- Wireless Institute of Australia Listeners' Numbers.
- One thousand additions, alterations and deletions since last edition, making over two thousand amendments since the 1954 edition.
- Up-to-date list of Australian Broadcasting Stations, F.M. Stations, and Television Services.
- DX Countries, Prefixes and their Zones.
- World-wide Awards available to Amateurs and Short Wave Listeners.

TELEVISION RECEIVERS

Intermediate Frequency Recommendations by the Australian Broadcasting Control Board

Of interest to all Amateurs is the present recommended set-up of Intermediate Frequencies for Television Receivers.

As far back as 1951, the Australian Broadcasting Control Board "reached the conclusion that the most suitable choice would locate the picture and sound carriers in the band 30-40 Mc."

In regard to the 20-30 Mc. band, the Board stated: "There are, however, a number of high-powered stations operating in this band in Australia, not far from capital cities. It is desirable also to avoid the 28-29.7 Mc. amateur band, because there are many amateur transmitters of moderate power in capital cities, and they are potential sources of interference. The use of intermediate frequencies in the 20-30 Mc. band would also involve intermediate frequency harmonic interference with the second channel, and image interference between the 62.5-70 Mc. channel and the channels in the 80-108 Mc. band. The use of intermediate frequencies in the 40-50 Mc. band (as is now being adopted in the United States of America) is impracticable if a channel as low as 44 Mc. is employed. The remaining choice is in the 30-40 Mc. band, and intermediate frequencies can be chosen there, to avoid image interference and the majority of the spurious responses and intermediate frequency harmonics which are likely to be serious. At the same time oscillator interference occurs in bands likely to cause little interference to other services. Where oscillator interference from receivers tuned to one channel falls in other television channels, it is considered possible to avoid interference by allocating such channels to stations in different districts.

"These considerations of intermediate frequency selection are based on the assumption that a conventional receiver design is employed. The Board, however, is not unmindful of the probability that a large percentage of receivers designed will be of the inter-carrier type which presents substantial advantages to the receiver designer. The problem, however, is not materially affected by this factor as the intermediate frequencies chosen will be suitable for use with such receivers. The chief difference lies in the fact that for the higher channels, oscillator frequencies can be below the channel frequencies, so that in these cases the oscillator can be in a different place in the frequency spectrum.

"For the reasons mentioned above and a number of other more detailed considerations, the Board is of the opinion that intermediate frequencies in the 30-40 Mc. band are most suitable for recommendation to the industry . . ."

Reaching more specific detail at a later date (1955), "In previous reports, the Board drew attention to the need for

determining a standard intermediate frequency for television receivers and stated its intention of conferring with manufacturers on this important matter. It is essential that standard intermediate frequencies for vision and sound should be employed for all receivers used in the Commonwealth, in order that the Board may be able to make frequency allocations for television stations in specific locations in such a manner as to avoid mutual interference between television and other services arising from image responses, intermediate frequency difference responses and beat oscillator radiation. If a multiplicity of intermediate frequencies were to be used in receivers, it would be impracticable to ensure maximum protection from interference, and receivers using non-standard intermediate frequencies could not be used on certain television channels without retuning of the intermediate frequency sections.

"During the year, the Board had several discussions with representatives of the receiver manufacturing industry arranged through the Associated Chambers of Manufacturers of Australia, as a result of which the Board decided to recommend to manufacturers that the following intermediate frequencies should be employed in all television receivers used in Australia:-

Sound carrier . . . 30.5 Mc.
Vision carrier . . . 36 Mc.

It was agreed that these frequencies should be adhered to within ± 0.25 Mc. and that the oscillator frequency should be above the channel frequency. Although representative manufacturers expressed the view that higher values of intermediate frequencies would, for a number of reasons, be preferable, it was agreed that the above standard frequencies should be used because of the difficulties of protecting higher frequencies from interference from industrial, scientific and medical equipment in the internationally assigned band of 40.88 Mc. The Postmaster-General's Department has agreed to arrange frequency assignments in the band encompassing the above intermediate frequencies as far as practicable to ensure protection of television services from interference by other services."

AUSTRALIAN V.H.F. RECORDS

Band Mc.	Stations	Date	Miles Rec'd	World
50	VKSKL-WYACS/KH6	26/4/51	5355	10500
	VKSPK-VHSCG	1/1/50	3990	
	VKSWG-VKZGQ	9/1/50	3816	
	VKDB-LZGIB	26/11/49	3504	
	VKIM-VKCB	30/11/49	2406	
	VKTBQ-VKQSB	—	2211	
	VKTL-VKQSB	—	2211	
144	VKSL-VKBSO	31/11/51	1328	1400
	VKQSR-VKBSO	9/2/53	1286	
	VKSGM-VKTLZ/PF	9/2/53	817	
288	VKSM7-VKSR0/5	13/4/52	106	
	VKAP7-VKAA7/3	31/3/54	63.8	
	VKBSO-VKSDW/5	1949	35	
876	VK3ANW-VK3AKE	11/12/49	81.6	
3200	VK3ANW-VK3KA	18/2/50	8.1	150

The above contacts are best known to date, but what of VKs 2, 4, and 7 contacts? Please send FULL details of your best contacts through your Division to P.E., giving particulars of both stations' locations at the time of contact so that your record may be listed above.

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YL CORNER

Calling all YLs and XYLs. This is your column and here in it we would like to have your news. Very few of the Amateur fraternity realise that there are twelve licensed YL operators in VK land, some of whom have been licensed for over twenty-five years. Through this column we hope to introduce them to you along with a description of their rigs, their activities in Amateur Radio, their interests other than Amateur Radio and their domestic commitments. In fact all about what goes to make one of the female sex become what is known as a "YL".

We also have room here, too, for contributions from XYLs for some of those funny little stories such as "I married a radio crank", or "There's a queer sort of wireless man lives at our place" or "Life with the OM", and how Amateur Radio does or does not fit in with the rest of family life. What about writing us an amusing article along these lines? What about your harmonics, do they put a spoke in Dad's works? Let's hear about some of the funny things they do.

★

HAMS—AS SEEN BY AN XYL

During the earlier part of my life, I was unaware of the existence of "hams" apart from the variety which provides a tasty dish. (No doubt some radio hams could do that, too), but to get back to the point, I was quite unaware there existed a band of radio fiends so named. Then along came my husband, and proved to be one of these things in disguise, as I found out merely by trying vainly to decipher an extraordinary muddle of wriggly lines interposed between peculiar oblongish circles situated here and there. These, I was informed, represent valves. Thus enlightened, I promptly forgot the incident. But the crafty devil had just started his onslaught.

Gradually, I became aware his interest was not always with me. This became evident by the unintelligible answers to some of my conversation. He preferred to read a thing called "Amateur Radio," which seemed to provide no end of interest for him.

One night, in the throes of a romantic novel, I was distracted by such words as "fidelity," "osculation," and someone called "Millie Amp"—whoever she was—emitting from the lips of my husband.

I decided to look into this book of his, but found my suspicions unfounded. In fact, I found the darn thing unreadable. It was then patiently explained that oscillation was the correct word, and that Millie Amp was no femme fatale, but precisely what it said—a very small portion of an Amp.

Next move was the arrival of some junk the "Hams" call it gear—but to me it's still junk. This consisted of a conglomeration of odds and ends, containing, so I was told, among other things, wires and bottles. The only bottles I've seen are the beer bottles he uses to fortify himself while listening

to a character called Jim give out each Sunday morning on a contraption referred to as a frequency. The said Jim seems of the opinion that something called a VK something-or-other tries incessantly to push him off a band of some description into oblivion each time he attempts to broadcast to his addicts.

This, I agree, is very inconsiderate and I would push them right back. Unfortunately, my husband does not seem to think this would solve the problem.

Sitting in pride of place in our sitting room is a horrible shabby box-affair—a moth-eaten piece of cloth protruding out the front. This, dear reader, is a speaker cabinet, and "Hams" seem unanimous in their approval of these in preference to a more up-to-date version. I don't myself, but then that is of no consequence.

Recently I caught this "Ham" of mine sneaking a form away in order to gain a ticket, which he informs me will allow him to carry out some experiments. He needn't add anything to that—and oh, heaven help me if he gets the darn thing.

—“SQUAWKER.”

P.S.—I've just heard something about woofers, squawkers, and tweeters. Wouldn't it?

★

I remember hearing of one young harmonic who took some of Dad's records and condensed them to school and swapped them to some of the older boys for cigarette cards. He was so popular with the older boys and he himself felt he had made such a good bargain as there were plenty more "denims" and "sisters" at home in Dad's box.

One small item of news I heard recently is that there are two Ods thumping a lift into the W.L.A. meetings since the respective YLs, Mrs. J. Zensibar-Sugar (Gwendra Hull) and Mrs. J. Tare-Fox (Nina Dennis), have got their driving licences. Their pool, Ods are having considerable difficulty in getting even a little loan of the keys of the car these days. You know, their husbands should really be very pleased, after all that makes two more potential chauffeurs for the fox buns and 60 mx tx huns.

Well now, what about it? We'll hope to have those contributions rolling in very soon. Contributions should be addressed to the Sub-Editor for VK3, Mrs. Phyl Menour, 235 Union Road, Ascot Vale, Vic.

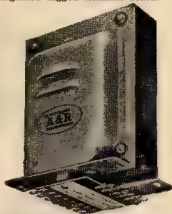
In next month's YL Corner we will introduce you to VK3YL, Austine Henry, the first, in the world to win the YL-WAC-YL.

TRADE REVIEW

Power Transformers by A & R

A. & R. Electronic Equipment Co. Pty. Ltd. have just released a new range of power transformers covering all standard voltages, with current ratings from 100 to 200 Ma., and designed for a maximum temperature rise of 90° centigrade.

As illustrated, these vertically-mounted transformers are fitted with ventilated pressed steel covers, finished in A. & R.'s standard silver-grey hammer-tone, with black cores. All types have a neatly-designed and clearly-designated lugged terminal board.



Other additions to the range include step-down transformers of semi-portable and fixed installation types, and also available is a kit comprising a power transformer, power choke and frame output transformer for the Philips' television receiver circuit.

Accent is again on quality, and A. & R. have retained throughout the same high standard of performance and finish that characterises this Company's popular range of audio transformers.

These excellent transformers are now available in all States, and A. & R.'s distributors listed in the advertisement in this issue will be pleased to supply full details.

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SHORT WAVE LISTENERS' SECTION*

SOUTH AUSTRALIA

Some chaps think a lot about the elusive DX, but me, not. I'm spending a lot of time thinking about club correspondents for this page. Why? Worked All States isn't it with this. No come on VK3, 7 and 9. We'd very much like to hear from you. Now for all the news from VK3, 3, 4 and 5.

NEW SOUTH WALES

Stan Abbey writes again this month and encloses a lot of stations he has heard. He'd very much like to know how we down here manage to hear all the DX listed in our reports. Well, judging by his own list, he's not doing too badly himself. The weather at Coolamon hasn't been very pleasant and band conditions also have not been the best, writes Stan. Jack Ashby, the other s.w.l. at Coolamon, is understood to have been working hard lately and has not had much time for s.w.ling. Greetings to you Jack. Jack's gear consists of an Edystone "460" with a preselector using an EF50 ahead of it, together with a five-tube home-brew for 30 mc, built into a rack and panel. The antenna is a centre fed 40 mc dipole. Jack JA7O is still giving these two boys lessons in Amateur Radio, but evidently still finds time to get on the air. Sign 5 x 9 on 30 mc down here Jim. For the information of other s.w.l.s, Jim does QSL.

Any other VK3 listeners can write to Stan Abbey at Mimosa Street, Coolamon, NSW, and give him any information for this page to pass on to us.

QUEENSLAND

A very interesting letter was received from Henry Zael, at Traralgon. Henry comes from Holland and has been in VK land about 2 1/2 years. Henry is using an AR7 set, but does not particularly like the separate coil boxes associated with that make of rx. He has built a test oscillator, signal tracer and multimeter. An intercom system he built was subject to squealing and hum, so he has dropped that project for the moment. Henry is studying

hard and soon hopes to sit for his ticket. One or two of you Traralgon boys may be able to get to know Henry and give him some assistance as he seems to be having a little trouble in his activities at the moment.

June Meeting.—At the meeting of the VK3 Group, Fred JVS gave us a talk on Construction and Operation of V.h.f. Gear. Fred discussed the building of simple converters for two metres and also stressed the usefulness of a grid dip oscillator in finding the band. Fred had brought some mobile gear along with which to demonstrate and at the conclusion of the meeting contacted Jim JA3A on 2 mcs. Thanks very much for this very interesting evening, Fred.

Coming Events.—As a result of a slight misunderstanding it was published that Geoff JDF would be giving a talk at the July meeting of the Group. However, Geoff has moved to VK5 and therefore will not be available. Still comes along to the meeting chaps. Remember, the Group meets at the rooms, 181 Queen Street, Melbourne, at 8 p.m. on the last Tuesday of each month. All who can attend are invited to join our Group in a visit to be made to "The Argus" newspaper office on Tuesday evening, 17th July. This visit is timed to begin at 8 p.m. and you are requested to be outside "The Argus", Cr. Elizabeth and Latrobe Sts., no later than 8.45 p.m.

QUEENSLAND

Don Bryant keeps the VK4 boys on the map this month. Evidently they are hoping to increase the number of s.w.l.s. up there as they are going to send notices to schools and clubs advertising their meetings and activities. Don tells me he is in the Army sips. Quite a number of Amateurs have first been bitten by the bug whilst in that outfit. He is putting up a new antenna. A ground plane, and fed dipole and a folded dipole. Boy, what an antenna farm he must have. He has about three skywires up already. I believe Don says that he has plenty of room in the back yard and can also use the yard next door if he wishes. How wonderful! Personally I haven't time to swing a cat or a dud tube for that matter.

We have now lost one VK5 correspondent and gained another. The annual meeting of the VK3 Group was held in June and the election of office-bearers resulted as follows: President, Jim Faru, Secretary, Len Cragen, Treasurer, Arch Halliday; and Correspondent, Mac Hilliard. I must offer my thanks to Len Cragen who has in the past done a very good job as correspondent, and welcome Mac Hilliard to the job. He won't last long in the job though I can tell you, you see he will soon be coming over to the premier State to reinforce the VK3 Group. We'll be glad to see you again Mac.

Prior to the annual re-election in the VK5 Group, the presentation of a Silver Cup was made to John Campbell, WLA-15011, who won the recent VK-ZL 3 w.l. Contest. Congrats to you John. Runner-up in the contest was Len Cragen, to whom we also pass on our congratulations.

The July meeting of the VK3 Group will consist of a visit to broadcast station SKA. Members of the VK3 Group are looking forward to the R.D. Contest to be held in August. QSL's received recently by some of the boys include G3HOL to John Campbell and CRICQ and ZS1KK to Mac Hilliard.

PERSONAL PARS

Following the example of ZEL, I, too, am taking steps to form a spy network, however, they have not given me such dope as yet. Bert Stebbing has that big bus going again, but has not yet appeared with mobile s.w.l. gear. Michael Ide is settling into his new QTH, but was recently struck by the virus. Congrats on winning the listeners' section of the Fourth Vio. Scramble. Michael Arthur 3AHD is understood to be busily painting his latest acquisition. Yours truly has many plans in the melting pot at the moment, including a new 50 ft. mast, new antenna, converters for 14 and 28 Mc. QSL cards and ways and means of getting chaps in VK3, 7 and 9 to write. David ZEAQ (WLA-13007) seen in circulation again together with David ZCAT (WLA-15037) who appears to be getting some new gear together. His car looks like a travelling radio warehouse at the moment. Something big is in the offing apparently.

* Compiled by: Ian J. Hunt, WLA-13007, 191 Robert Street, Northcote, Vic.

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FEDERAL, I.S.L., and DIVISIONAL NOTES

FEDERAL PRESIDENT'S REPORT 1955-56

It is my privilege to present the annual report of Federal Executive covering the period March 1955 to April 1956. Although members have been dogged with sickness and personal business affairs, I feel there has been steady progress in our year's programme of work. It would be remiss of me if I did not mention that there is yet remaining a lot of unfinished business on our agenda, but this will be gradually finalised now that a lot of minor matters have been resolved and definite conclusions reached. Turning now to the details of our operations for the period under review.

REGULATIONS

Our dealings with the Administration have been confined on a healthy personal basis with several special meetings to discuss additional operational privileges for the Australian Amateur, the V.M.R. Important items being the release of Amateur Television facilities and mobile-portable operation for 24 hours without a permit, on which all will have received official notification. The former, which is not perhaps affecting a large number at present, nevertheless has realised the elimination of many years of endeavour and research on the part of the Department which at long last bore fruit. I am sure the latter privilege will appeal to most Amateurs, and I am glad to see the relaxation of the former restrictions on this aspect of the Regulations.

POLICY MATTERS

As promised at the commencement of the year, a complete revision of the Federal Policy Book has been issued to all Federal Councillors. This will be kept current from now on by the issuance of amendments as they arise. A matter of some concern was the dropping of the Federal Convention at Easter. It is now three years since a Convention was held, and I am sure that the importance of import within each Division which can be ascertained and discussed around the conference table to the benefit of all sincerely trust that the next Convention will be held not later than Easter 1957.

MEMBERSHIP MATTERS

This year has also seen the advent of a new Division—the Papua and New Guinea Division—where under various reports, a marked increase in the growth of the Institute. I was privileged to deliver a welcome to the new Division via tape recorder and with them well. Their station, KAGW, is already operating and making a close bond between outlying members. The membership within Divisions continues to increase and this has been stimulated to some extent by our limited licenses and the recently instituted Short Wave Groups in Divisions. It should be the aim of all Divisions to secure membership of ALL full transmitting members so that our Institute encompasses as many as possible of those engaged in Amateur Radio as a hobby.

NEWSLETTER

During the period our Newsletter was inaugurated and I hope it has filled the gap between official letters and personal correspondence to Divisions as well as providing some matter for broadcast of interest to listeners.

OVERSEAS SOCIETIES

Our friendly relations with the I.A.R.U., A.R.R.L., R.S.G.B. and the N.Z.A.R.T. have all been continued during the period and I look forward to every year's liaison with these Societies on matters of mutual interest in the future.

VKSWIA

Members of Federal Executive were approached to place the Federal Station, VK3WJ, into operation at the Pan-Pacific Jamboree over the Christmas-New Year period. The success of this venture was evidenced by the interest displayed by all who saw the station in operation, and by those overseas stations who created a great deal of interest in our endeavour to make contact. In all some 500 contacts were made in 30 different countries during the ten days of almost continuous operation. I wish to record my thanks to all those who assisted with the installation and operation of the station as well as the Services who most generously supplied the bulk of the equipment. It is our intention to institute a regular news service for disseminating information to all members for which purpose a new transmitter has been put into service. You will hear more of this in the coming year.

AUSTRALIAN CALL BOOK

The continued success of this publication speaks well for its future and is a tribute to the untiring efforts of the Publications Committee of the Victorian Division, who publish it on behalf of the Federal Council. I think you will agree that our aim to progressively improve the book has been carried out faithfully and I am sure the Olympic Year Edition will prove worthy of its present distinction.

FEDERAL FINANCES

I am somewhat disturbed by the present state of Federal finances. As can be seen from the Federal Treasurer's Balance Sheet shown here, the balance is very low for an organisation of our size. In addition, account No. 2, which was set aside as a Convention Fund, is almost negligible. Divisions should make an effort to receive some finance for this account against future Conventions. The last minute inroads into Divisional funds will be obviated if monies are put aside now. A revision of our present financial restrictions is also due, as the costs of operating has progressively increased over the last three years since a Convention.

CONTEST AND CERTIFICATE MATTERS

The presentation of the W.A.V.K.C.A. award for overseas Amateurs has evinced great interest and is now established as one of the most sought-after DX awards, resulting in very desirable publicity for VK Amateurs. Some work has also been commenced on the Worked All States award for VK Amateurs. Further Membership Certificates have been printed and are now available for issue. The Federal Contest Committee are now operating on a sound footing with properly constituted Rules and Duties. They have instituted an up-to-date Register of all results of all Contests and Certificates issued since 1945, so that no omissions or mistakes should be made in future. Finality has not yet been reached on the Remembrance Day scoring which is of fundamental importance, but every endeavour will be made to complete this as soon as possible. The Ross Hull Contest

was extended to include all v.h.f. bands, per Convention directive, thus enabling I.A.C.C.P. operators to participate. The Rules of the VK/ZL DX Contest, in conjunction with the N.Z. A.R.T., have now been stabilised as well as awards and this contest promises greater popularity in the future. A willing band of helpers from the VK3 Division have assisted in the checking of the R.D. Contest which continued to attract entrants. A revision of VK3 scoring points have been deferred until after the 1958 Contest. Although the Field Day Contest attracted more entrants this year, but submissions were few, making the Committee's job of checking very difficult. Surely it should not require very much effort to send a log in for checking, even if the chance of winning a certificate is remote. The Federal Contest Committee have had a profitable 12 months of active work under the able guidance of Jim Vivian.

The Federal Awards Manager, Gordon Weynton, has handled 44 applications for the DX C.C. award, 32 for the new W.A.V.K.C.A. award, 4 for W.A.C. 1 for W.B.S., 4 for D.U.V. and 1 for the W.A.B. 80 awards in all, 83 applications, which represent the lot of work.

The Federal QSL Manager, Ray Jones, and Traffic Manager, Doug Payne, in their respective spheres have been unobtrusively carried on their tasks with great efficiency, thus making the tasks of Federal Executive a little easier. To them and all other co-opted officers, not mentioned by name, I extend my sincere thanks for the sterling job they have carried out during the past twelve months. All have given a great deal of time to an honorary office, each being equally important to the smooth functioning and well governing of the Institute. I trust they will all continue in their offices and carry on their duties with interest in the future.

Last, but not least, I wish to thank all members of Federal Council and particularly Federal Councillors for the support they have given during my period of office. I make exception to mention especially, the Federal Secretary without whom the Federal Executive would not function. The personal letters and counselling he has made with members from all States

WIRELESS INSTITUTE OF AUSTRALIA—FEDERAL EXECUTIVE BALANCE SHEET AS AT 29th FEBRUARY, 1956

Current Liabilities, Creditors	275 19 3	Current Assets—	
Accumulated Fund	—	Commonwealth Trading	
Balance, 1/3/55	£243 9 1	Bank No. 1 A/c.	£70 8 10
Less Deficiency for the	—	No. 2 A/c.	1 11 8
year ended 22/2/55	68 4 10	Cash Imprests	0 0 0
		Debtors	340 9 0
		Stock on hand	94 0 0
	474 4 3		£414 9 8
		Fixed Assets (at cost less depreciation)—	
		Eddystone Model "640"	
		Receiver	£18 0 0
		Trophy, R.D.	10 10 0
		Trophy, Ross Hull	—
		Memorial	25 4 0
		Filing Cabinet	22 0 0
		Typewriter	51 0 0
			138 14 0
	£250 3 6		£250 3 6

I have examined the books and vouchers of the Wireless Institute of Australia (Federal Executive). In my opinion, the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the state of the Federal Executive's affairs as at 29th February, 1956, and that the attached Income and Expenditure Account is properly drawn up to exhibit a true and correct view of the results for the year ended 29th February, 1956, and showing the best of my knowledge and the explanations given to me, and as shown by the books. Stock on hand at 29th February, has been accepted on the certificate of the Secretary.

1st June, 1956

REG W. ELLIS, Dip.Com., Chartered Accountant (Aust.)

INCOME AND EXPENDITURE ACCOUNT FOR YEAR ENDED 29th FEBRUARY, 1956

EXPENDITURE		INCOME	
Budgets	£7 8 0	Per Capita Payments	£172 11 0
Trophy Expenses	—	Sale of Books and Log Sheets	7 9 1
Printing and Stationery	33 8 11	Loss transferred to Accumulated Funds	—
Certificates	35 12 3		68 4 10
Depreciation	30 12 0		
Audit and Accounting	—		
Postage	14 10 8		
Telephone	8 8 6		
Scout Jamboree	40 18 9		
Typing and Duplicating	4 15 0		
Log Sheets	—		
Reprint Typewriter	7 0 0		
Entertaining	22 11 0		
Sundries	20 14 7		
	£248 4 11		£248 4 11

frequently heard on the lower bands. Jim 2AJ0 not so much heard lately and is probably listening for that rare DX.

NORTH WESTERN ZONE

Tom 2AMR has been quite busy on 10 mc—reports good contacts on the DX bands. Chris, ex-2AJE, has built himself an experimental i.v. camera and a few lenses. Only one 350 lines, but quite good for experimental purposes. Bill 2ACT, although 300 miles from the ocean, is experimenting with marine gear for 7 mc. A ship antenna is on the motor boat. Results are very good and Bill has had contacts as far as the South Coast. Noise from the station is constant. The weather (How about cars, Bill?) Good 2AWE has been up to the boards on telephone repairs in the flooded areas, whilst Ken 2AMK is on the air every day on 7 mc, and has regular lunchtime slots with 2AMR/2ACU. Rod 2ACU is operating on 7 mc, only and is to be heard in the lunchtime gap. The funny background noises are "mumbled sandwiches".

CANBERRA RADIO CLUB

On Friday, 30th June, a v.h.f. night was held at the club. About 15 were present. Stan 1ASB gave a talk on how to convert a 8CR22, Ken 1AIL (President) talked on how to do a deluxe version of same. John 1ZBS showed how to modify a mod. using a pair of 6X4s, one of which he had fixed up for George 3ZBT. The mod. one was tuned in on Ken's 522 rx at the beginning of the talks (the rx being in another room) and the gain was turned down. The mod. one was left running into a dummy load during all the discussion and at the end the gain was turned up and hey presto! it was still tuned in on the noise. Also at this meeting, it was decided that 7.30 p.m. any night would be the local net time, so you talk on the other side of the border. The net is running from 7.30 towards the capital at 1930 hours any night (bearing Friday, which is club night), but especially on Saturday.

Another topic, a perennial this, also covered at the meeting was aerials. The good results from 1ZBS' three baluns has impressed the boys here. The big advantage is not having to rotate it; an construction is in fact. However, 12 elements are still the most fashionable.

A list of those on the air and building 2 mc gear follows. This does not include a few dark days' work on a kite, an ambitious 1ASB 144.163 MC, 12BS 144.90, 1PM 144.14, 1GU 144.1UH 146.5 3ZBT 144.5, 1AVP 144.05, 1AIL 144.1 on the air as at 30/6/68; 1JG, 3AGJ, 1TV, 1AOP, 1ALS, 1RL, 1ZCA, 1CAN, all building or modifying 8CR22s.

VICTORIA

There was a very excellent attendance of approximately 100 at the July general meeting. The lecturer was Mr. Jack Verigan, VKSWR, and his subject, which proved to be a most interesting one, was on "Single Side Band Techniques." Some interesting features of his lecture included the fact that on many occasions he has had 100 per cent. contacts with DX stations when not a single a.m. DX signal was visible on the band. Jack gave a short description of the phased type, a most very detailed description of the lattice filter type. His many block diagrams made his explanation very clear and helped very considerably to allay fears of complications in a.s.b. b.c.s. He dealt very extensively with the ratio of the a.s.b. to the signal when receiving a.s.b. on the ordinary a.m. rx. He covered very concisely with both description and tape recorded demonstration that too little b.f.o. injection makes it impossible on a.m. rxs. B.f.o. injection must be high or, alternatively, the r.f. gain must be turned down for good copy. Members thoroughly enjoyed the lecture and some mentioned they were eager to read up more on the subject as they felt text-books would now be more comprehensible after Jack Verigan's very interesting lecture.

Members were very pleased to see George 3AG present at the meeting. George was involved in a bad motor accident a couple of months ago and although he is still a little bit shaky on it, he assures us he is coming good. Mr. A. Frances-Williams, ex-V3JFU, and who is awaiting a VK call, was welcomed to the meeting and gave a short talk on Malaya Amateur Radio. The following were welcomed as new members of the Victorian Division: Mr. P. Bennie, 3ZDP, as a full member, and Messrs. E. Zair, R. O'Malley, N. Blomster and E. R. Price as associate members.

The lecturer at the next general meeting to be held on 1st August will be Mr. Hans J. Albrecht, 3AHH, and his subject will be "Radio

Control of Research Mindset." This lecture will be illustrated with slides. As the meeting room will not be available on the first Wednesday in September, there will be no general meeting in that month, instead a general meeting will be held on Wednesday, 29th August, when Mr. Alan Foxcroft, 2AR, will give a lecture entitled "Sunspots and DX." This lecture will be illustrated with slides.

A 3 x 5 block and tackle, giving a 1-ton lift for a distance of 36 feet, together with a carrying case, has been donated to the Institute. This new addition, instead of being used for the instrument library room, is now being used for contacting the Administrative Secretary at the Institute rooms, 191 Queen Street, Melbourne. Well, there goes your last excuse, there just is no reason why you can't get that antenna rx now!

Hans 2AHR has received a letter from the President of VK3, Jim 2YC, asking Hans to convey thanks to all in VK3 who co-operated in keeping the emergency frequency 7050 Kc. clear during the recent floods.

Hey, didn't anybody read my notes last month. Surely you're not the one who clutters up the slow more practice transmission frequency 2530 Kc. In the 40 mc band on Sunday evenings between 2.30 p.m. and 3 p.m. you are most likely to have the 80 mc tx hunters tracking you down and personally requesting your consideration to keep the frequency clear. It's just for such a very short period and only once a week, you know. A new operator has been added in the roster for these transmissions. He is Yarn 3YF and he will be making 20 transmissions during the month of August, and being new at the job he will be particularly anxious to receive reports on his transmissions, either by letter or a call on 2 mc. These transmissions are also relayed on the 2 mc band on 140 Mc.

There have been several requests that the names of the Victorian Division Councilors be again published in the magazine. They are as follows: President, G. Dennis, 3TF. Secretary, F. Hall, 3VS; H. Ridge, 3VT. Treasurer, 3JAH, J. Marland, 3NY; K. Pincock, 3APJ; E. Charles, 3AJC; L. Robinson, 3ALD; D. Wardlaw, 3AW. C. Bingham, 3GU.

Have you purchased a copy of the latest "Call Book", the Olympic Edition? It's a booklet well worth having. Copies are available at the Victorian Division Office where the Administrative Secretary, Mr. GREGG, has attendance on Tuesdays, Thursdays and Fridays between 9 a.m. and 4.30 p.m. Are you ready for the 10-Month All-Band Scramble to be held on Monday, 8th August, between 9 a.m. and 11 p.m. For rules, see copy of "A.R." for Sept., 1968, p.12. The Remembrance Day Contest is scheduled for 15th and 15th August, and the rules and details see "A.R." for July, 1968, p.6.

90 METRE TRANSMITTER HUNT

Despite a rather cold and windy day, we had a very good turn-up to the last 80 mc tx hunt. The crowd numbered 46 with Amateurs, their XYLs and families. We were very pleased to see several new starters come along, they included Tom 3AOG, George 3XJ, Bill 3AGD and Noel 3ANS. The tx was hidden by Ed, 2EHR and was located at Altona. Ed was in a hole in the sand and used a long wire for the aerial, which was attached to a box kite and being a very windy day, Ed had no difficulty in keeping the kite aloft and away from the high up in the air. The first to arrive in the vicinity of the hidden tx was Noel 3ANS, but unfortunately for Noel, he didn't snoot around quite enough and he drove off without detecting the tx. Eric 3ADU was the next one to come along and he found the tx and became the winner. He was followed by 30J second, and 3ZAD third.

The next hunt will be held on 31st August, when the winner, 3ADU, will be hiding the tx. How about coming along, we'd enjoy your company. Bring the family and friends and some afternoon tea and make a picnic of it. We are sure you'll enjoy the gang too, as they are a very friendly lot. There will be a start at 2.30 p.m. from the plantation in College Crescent at the rear of the University. Remember, Sunday, 8th August. We'll hope to see you.

VK3 QSL BUREAU

Would members please note that all QSL cards for VK3 (both inwards and outwards) are now handled at the Victorian Division's rooms. The correct address is Wireless Institute of Australia, Victorian Division, 191 Queen Street, Melbourne, Vic.

SOUTH WESTERN ZONE

The zone is still very active on most bands, no matter what time you turn the key on you will always hear one of our chaps on one of the bands, particularly Jack 3JA, who seems to be the king of the 14 Mc band, and Larry 3XJ, who has now worked 165 countries, which is a very good figure. John 3ARJ is still getting his share of QSOs on the old 475, Bill Wines and XYL spent a few days in Geelong on holidays and met 3JC, also went to the club meeting. Bill 1AWZ has had a little QSB in the old carcase which I hope has cleared up.

Norm 3EQ is still getting steamed up ready to remote control all the gear from the lounge. 3JA and XYL recently spent a couple of weeks in VK3, John 3AGD has been busy lately, having been visited by Kevin 3AKR and others. Leigh 3H had rather a good time in Central Australia with 3AM.

The minutes of the last meeting should be in the hands of all concerned very soon, also the date for the usual Zone Convention has not been set yet, but will be either in October or the first week in November, the latter would be better. The Kinross Trophy should be in the zone shortly as it has been engraved and 3XJ will collect same.



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"	1766	125 " " "	" "	285-C.T.-285
"	1767	" " "	" "	300-C.T.-300
"	1768	" " "	" "	325-C.T.-325
"	1769	" " "	" "	350-C.T.-350
"	1770	" " "	" "	385-C.T.-385
"	1771	150 " " "	" "	285-C.T.-285
"	1772	" " "	" "	325-C.T.-325
"	1773	" " "	" "	350-C.T.-350
"	1774*	" " "	" "	385-C.T.-385
"	1775	" " "	" "	350-C.T.-350

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"	1777	" " "	" "	325-C.T.-325
"	1778	" " "	" "	350-C.T.-350
"	1779	" " "	" "	385-C.T.-385
"	1780	200 " " "	" "	350-C.T.-350
"	1781	" " "	" "	400-C.T.-400
"	1782	" " "	" "	450-C.T.-450

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				each side C.T.

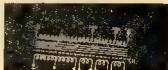
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		(400 Ma Inter- mittent Rating)		600, 500 each side C.T.

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CENTRAL WESTERN ZONE

We are pleased to welcome a new member to our zone in 3ACV. Vic was in Merv's shack during his school days, so we had the pleasure of having a few words with him. He is already active on 40 mc and will be on other bands. We wish him luck and hope his stay in our zone is long and happy in this zone.

Our zone hook-ups have been going along fine and recently Heri 3NN came on with a five minute hook-up recently, so we had the question district. Bob 3ARM and Jim 3DP are two of the other regulars, both these chaps have been attending the meetings during the winter periods when the weather has made it impossible to carry on with their farm activities.

EASTERN ZONE

We wish to welcome two new calls into the zone this month. One is Cliff Trill, 3AIT, and the other Peter Thorne, 3ZDT. Congrats boys and hope we hear plenty of you on the bands. Cliff is already joining DX and Peter is building a 3 mc tx gear. Had a letter the other day from a Dutch chap in Traralgon, Henry 3ZT, who has become an active member of the W. zone. He is a c.w.l., WIA-13307. Very pleased to welcome you Henry and we will be pleased to see you at the general gatherings. We also heard from a chap who was spent at Maffra on 22nd May when there were over 30 present. Keith Scott brought a television set back from Melbourne on 3rd May and gave a general talk on television which was of great interest to all. A very delightful supper was served by Mrs. Scott and the gathering broke up at 12 midnight.

It was very pleasing to see some of the chaps we should hear on the air at Keith's and to know they are still alive and kicking. Ron 3PR, Jack 3AE, Ian 3AAV and 3AAT are the regulars on 27 mc hook-ups. 3AEC was heard on during the month, he is in Bairnsdale. Ron 3ZD is also active on 27 mc. 3AEC and 3BAC have been heard by them on 2 mc. Stations active on 2 mc are Ian 3ZAB, Gordon 3TH, Jim 3DL, George 3ZCG, and 3BAC. 3BAC is a very active and 3BAC is very active, more so than the lower frequencies. Ron 3PR has everything in hand for the State Convention to be held in Leoburn on 3rd May at 40 mc. Whoever they intend coming to the Convention should contact Ron Jardine, VICEPR, Blackmore Ave., Leongatha.

NORTH EASTERN ZONE

Doug 1LJ is now on 15 mc. Jack 3PF is on a bit of 30 mc DX. Howard 3VV has his tx t.v. proofed already. Bruce 3GC has been away on a holiday. Jim 3RZ is active on 27 mc with that team. Brian 3AMZ has been heard on 40 mc. Henry 3HP and his XYL are receiving congratulations on the recent arrival of a daughter. Des 3BP was been recently testing very low powered equipment. Vern 3AXW is still reorganizing his shack after moving it to the garage. Alan 3UL is, unfortunately, in hospital in Melbourne for a time and Keith 3JC is allowing only limited time to radio. Peter 3APF is mainly on the v.h.f. bands.

Johnny 3ACK is going on quietly with his job in Melbourne. He is in his new job in Shepparton. Syd 3CI is finding the cold weather hard to face in the shack. Des 3CO was busy organizing for the 1967-68 season. Keith 3AD is in Seymour, when it is hoped that we will have those associate members of whom we have nothing at the moment. Keith 3AD is also a very good caller working the reply to the weekly broadcasts from 3WL.

GEELONG AMATEUR RADIO CLUB

There was a good attendance at the annual meeting held recently and the following members were elected as officers for 1967-68: President, John 3AK; Secretary, John 3AK; Treasurer, G. Woods; C. Hyatt; 3KB; Secretary, J. Barber; 3ABT; Treasurer, A. Forster, 3AJT.

The Ladies' Night held recently was most successful. A fine evening was enjoyed by all. Jim Barber showed some interesting coloured slides of general interest and also a very interesting one on the 1967-68 season. A nambou Convention. Mr. V. McCarthy showed a series of 8 mm. films which particularly pleased the children. The men excelled themselves in the club and a very pleasant evening concluded a happy evening. Bill Wines visited the club and we had a rag-chew on the activities of the zone.

At a recent sale of disposals gear, the club received a handsome profit which will be used for purchasing equipment. A new syllabus has been completed and a very good attendance at the evenings set down.

QUEENSLAND

The June general meeting was like old times, there was an attendance which was like the old days and though they may have attended the 40 mc band, they were not in the 40 mc band. Television Interference Suppression. We hope that the attendance was a sign of things to come in the near future. Tibby's lecture was really a clear and recorded lecture and will be put over 4W1 for the country boys to hear. Tibby illustrated his lecture with a table-top rig, made up of 4M4, 4M5, 4M6, 4M7, 4M8, 4M9, 4M10, 4M11, 4M12, 4M13, 4M14, 4M15, 4M16, 4M17, 4M18, 4M19, 4M20, 4M21, 4M22, 4M23, 4M24, 4M25, 4M26, 4M27, 4M28, 4M29, 4M30, 4M31, 4M32, 4M33, 4M34, 4M35, 4M36, 4M37, 4M38, 4M39, 4M40, 4M41, 4M42, 4M43, 4M44, 4M45, 4M46, 4M47, 4M48, 4M49, 4M50, 4M51, 4M52, 4M53, 4M54, 4M55, 4M56, 4M57, 4M58, 4M59, 4M60, 4M61, 4M62, 4M63, 4M64, 4M65, 4M66, 4M67, 4M68, 4M69, 4M70, 4M71, 4M72, 4M73, 4M74, 4M75, 4M76, 4M77, 4M78, 4M79, 4M80, 4M81, 4M82, 4M83, 4M84, 4M85, 4M86, 4M87, 4M88, 4M89, 4M90, 4M91, 4M92, 4M93, 4M94, 4M95, 4M96, 4M97, 4M98, 4M99, 4M100, 4M101, 4M102, 4M103, 4M104, 4M105, 4M106, 4M107, 4M108, 4M109, 4M110, 4M111, 4M112, 4M113, 4M114, 4M115, 4M116, 4M117, 4M118, 4M119, 4M120, 4M121, 4M122, 4M123, 4M124, 4M125, 4M126, 4M127, 4M128, 4M129, 4M130, 4M131, 4M132, 4M133, 4M134, 4M135, 4M136, 4M137, 4M138, 4M139, 4M140, 4M141, 4M142, 4M143, 4M144, 4M145, 4M146, 4M147, 4M148, 4M149, 4M150, 4M151, 4M152, 4M153, 4M154, 4M155, 4M156, 4M157, 4M158, 4M159, 4M160, 4M161, 4M162, 4M163, 4M164, 4M165, 4M166, 4M167, 4M168, 4M169, 4M170, 4M171, 4M172, 4M173, 4M174, 4M175, 4M176, 4M177, 4M178, 4M179, 4M180, 4M181, 4M182, 4M183, 4M184, 4M185, 4M186, 4M187, 4M188, 4M189, 4M190, 4M191, 4M192, 4M193, 4M194, 4M195, 4M196, 4M197, 4M198, 4M199, 4M200, 4M201, 4M202, 4M203, 4M204, 4M205, 4M206, 4M207, 4M208, 4M209, 4M210, 4M211, 4M212, 4M213, 4M214, 4M215, 4M216, 4M217, 4M218, 4M219, 4M220, 4M221, 4M222, 4M223, 4M224, 4M225, 4M226, 4M227, 4M228, 4M229, 4M230, 4M231, 4M232, 4M233, 4M234, 4M235, 4M236, 4M237, 4M238, 4M239, 4M240, 4M241, 4M242, 4M243, 4M244, 4M245, 4M246, 4M247, 4M248, 4M249, 4M250, 4M251, 4M252, 4M253, 4M254, 4M255, 4M256, 4M257, 4M258, 4M259, 4M260, 4M261, 4M262, 4M263, 4M264, 4M265, 4M266, 4M267, 4M268, 4M269, 4M270, 4M271, 4M272, 4M273, 4M274, 4M275, 4M276, 4M277, 4M278, 4M279, 4M280, 4M281, 4M282, 4M283, 4M284, 4M285, 4M286, 4M287, 4M288, 4M289, 4M290, 4M291, 4M292, 4M293, 4M294, 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Rack Mounting Type AMPLIFIER CHASSIS

Overall size: 19 x 10 x 7½ inch
10/- each

TRANSMITTING TUBES

327 15/- each
RX21 Mercury Vapour Rec-
tifiers 15/- each

Full Track TAPE ERASE HEADS

Brand new in boxes
39/6 each

RESISTOR OR CONDENSER SUBSTITUTION BOXES

Metal box complete with en-
graved panel, ready for building
up into useful instrument.
Requires the addition only of
switches and condensers or
resistors.
10/- each

Brand New 7 INCH PER. MAG. SPEAKERS

Well known make, boxed.
27/6 each plus tax

WIRE WOUND RESISTORS

Good assortment.
Approx. 24 in bag.
10/- bag

LECTROFLASH CAPACITORS

650 uF. 250v.
42/9 each

BARGAINS! BARGAINS!

GANG CONDENSERS

Large variety, 2 or 3 gang.
8/11 each

POWER TRANSFORMERS

various types
10/- each

WIRE WOUND POTENTIOMETERS

1000, 2500 and 10,000 ohms
3/11 each

SWITCH POTENTIOMETERS

one megohm
4/11 each

PUSH BACK HOOK-UP WIRE

10 yards for 2/-

ENAMEL WIRE

27 s.w.g., 2 oz. coil, 2/- plus tax
22 s.w.g., 4 oz. coil, 3/9 plus tax
20 s.w.g., 4 oz. coil, 3/9 plus tax

NO MAIL ORDERS. PERSONAL SHOPPERS ONLY.

290 LONSDALE STREET, MELBOURNE

FB 3711

TV for the Amateur

Plugs & Sockets for TV Aerial Terminations by BELLING AND LEE

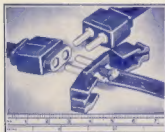
A complete range of twin feeder and co-axial transmission line plugs and sockets is provided for Amateur and TV services by Belling and Lee Ltd., as under:

Plugs and Sockets for Twin Feeder



L733/P—Free plug for twin feeder.
L733/S—Fixed socket.

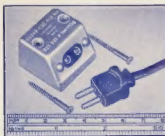
These inexpensive plugs and sockets were designed for use with unscreened balanced twin feeder as employed in television and short wave installations. Accepts 80 or 150 ohm feeders. L733/J—Free socket. This is similar to L733/P, but is fitted with socket inserts as in L677/J.



L733/J—Free socket.
L677/P—Free plug for twin ribbon feeder.
L677/J—Free socket.

Designed for use with 300 ohm unscreened twin ribbon feeder as used for short wave work and television. Conductors are pinched in the spills on the solid pins and the "butterfly" type moulding fits over the feeder. Special slots grip the cover over the cable conductors.

Interchangeable with L733/P and /S, and L739.



L739—Outlet socket box for 80 or 150 ohm feeder.
L731—For 300 ohm feeder.

A skirting board termination for unscreened balanced twin aerial feeder. L733/S forms the outlet socket which will take L733/P and L677/P.

Co-axial Outlet Sockets



L735—Outlet socket box.

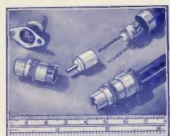
An improved surface mounting outlet box designed primarily for neat termination at the skirting board of television aerial installations. Will accommodate feeders up to 1/16 in. diam. The appropriate range of plugs is listed under L1329, L794/P and L761.

This box is also suitable for certain laboratory and test bench installations.



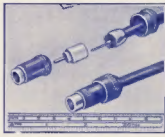
L763—Double outlet box.

This box has two standard outlet sockets and is complete with a "star" matching network which provides the coupling between the incoming cable and the outlets. When two receivers are connected, the input to each is 6 db. down on the input to the box. Designed for use in demonstration rooms, workshops and laboratories, etc., or where neighbours in semi-detached or terraced houses wish to share a television aerial installation. The appropriate range of plugs is listed under L1329, L794/P and L761.



L734/P and L1329—Standard free plugs.
L734/S—Fixed socket.

Co-axial Outlet Sockets



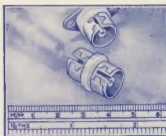
L781/P—Free plug, insulated.



L781/J/Al—Free socket.

Belling and Lee range of plugs L794/P, L781/P and L1329 conform to the draft R.E.C.M.P. Specification for television inlets. In addition to these requirements they are also designed to meet the various recommended methods of correct loading. In L794/P and L781/P the pin is retained in the insulator. L1329 has a hinged moulding to enable the pin to be withdrawn for soldering and/or crimping.

Complementary sockets for above range of plugs are L794/S, L804/S (fixed) and L794/J (free).



L616—Adaptor.

L604/S—Fixed socket.

A particularly useful application is for the aerial input circuit in car radio installations. The co-axial cable designed expressly for this purpose loads perfectly into this tag. The sockets are suitably designed to hold the plug against vibration and are cadmium plated.

The fixed socket L604/S is the complementary mating member to our co-axial plugs. A flush mounting type, L724/S, is also available.

Australian Factory Representatives:

R. H. CUNNINGHAM PTY. LTD., 118 Wattletree Road, Armadale, Vic.